

# PATENT SPECIFICATION

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- (21) Application No. 16727/77 (22) Filed 22 April 1977  
 (31) Convention Application No. 7614135U (32) Filed 4 May 1976 in  
 (33) Fed. Rep. of Germany (DE)  
 (44) Complete Specification published 20 Feb. 1980  
 (51) INT. CL.<sup>3</sup> F16B 2/24 21/00  
 (52) Index at acceptance  
 E2A 370 415 417 GB  
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## (54) PIPE OR CABLE CLIP

(71) We, HILTI AKTIENGESellschaft, a Corporation organised and existing under the laws of the Principality of Liechtenstein, of Schaan, Liechtenstein, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention concerns a pipe or cable clip.

An object of the invention is to provide a clip for the reception of a pipe or a cable comprising a resilient foot part having a reception aperture for a fastening element such as a bolt, and, upstanding from the foot part, side-by-side clipping limbs defining a mouth for reception of a pipe or a cable.

20 Already known for use in the laying of cables or installation of pipes are clips which are screwed onto the free end of a threaded bolt. However, this method is very time-consuming and causes correspondingly high mounting costs.

For certain applications it is also known to use clips having clipping tabs, such clips being fitted, for example, onto smooth bolts. Because of the tabs, this form of clip clips itself firmly onto the shank of the bolt. Whereas this type of fastening has certain advantages, considered from the point of view of expenditure of time on the mounting, these advantages are cancelled out by 30 further disadvantages, more particularly in that the clip can, in time, loosen especially when mounted on component parts or structural members which are subject to vibration.

40 With the present invention, there is provided a clip which can be fastened in an economically advantageous manner and which is reliably securable vis-a-vis all loads which occur. This is achieved, in accordance with the invention, in that the foot

part is arched towards said mouth, and that the said reception aperture for the fastening element is arranged in said arched foot part's apex region.

In the clip in accordance with the invention the resilient foot part can be pre- 50 stressed or biased. This biasing is effected by pressing together the two clipping limbs. As a result, the arching of the foot part becomes flatter and the clip can, when 55 placed onto a bolt, engage the lower part of the bolt's shank. Upon releasing the clipping limbs, the foot part tends to arch up again as a result of its resilient, so that the reception aperture clips itself more 60 securely onto the bolt.

To ensure engagement of the clip with the bolt, it is advantageous if the reception aperture is surrounded by resilient tabs. Because of the presence of these resilient 65 tabs, it is possible to dimension the cross-section of the reception aperture so as to be slightly smaller than that of the bolt. When the clip is fitted onto the bolt, the tabs are deflected contrary to the slip-on 70 direction and engage firmly with the bolt. Upon release of the clipping limbs, which were pressed together during the fitting of the clip, the tabs are forced, by the resilience of said limbs and of the foot part, into 75 a tighter engagement with the bolt.

In order to compensate for the resulting lateral forces and to prevent any canting of the clip, it is advantageous to provide two of said tabs, these being mutually-opposed 80 to one another. By providing only two tabs, the foot part is not significantly weakened, and by providing these tabs in a mutually-opposed disposition, an optimum clipping force is achieved. 85

In order to ensure that upon the pressing together of the clipping limbs the tabs move also, it is advantageous for the two mutually-opposed tabs to be directed toward the pipe or cable receiving mouth. 90

When, as a result of forcing the clipping limbs together, the arching of the foot part becomes flatter, the tabs move correspondingly away from the pipe or cable receiving mouth and when the clip is slipped onto a bolt, can engage with the bolt at a position which is lower down than would otherwise be the case.

In order to facilitate slipping of the clip onto a bolt, it is advantageous for the tabs to project tangentially away from the arched foot part and to be directed at the reception aperture. Then, the tabs can yield contrary to the slipping-on direction, with the result that the reception aperture, remaining between the tabs, is enlarged. The tabs disposed in this way at all times resist any drawing-off of the clip from the bolt. With the use of appropriate tools it is, however, possible to release the clip from the bolt, without any damage.

Upon forcing-in a cable or pipe into the pipe or cable receiving mouth, the clipping limbs are moved away from one another and the bias of the foot part toward the pipe or cable receiving mouth is further increased. The forcing-together of the clipping limbs with the cable or pipe inserted is not possible, since the cable or pipe acts as a locking part. Loosening of the clip in this state is therefore, impossible in practice.

The invention will be described further, by way of example, with reference to the accompanying drawing, in which the single figure is a perspective view of a preferred embodiment of the clip, of which part has been cut away for clarity of illustration.

Illustrated in the drawing is a support 1 to which a bolt 2 is fastened. The fastening of the bolt 2 to the support 1 can be effected, for example, by driving-in e.g. with a cartridge-powered driving tool, or by welding-on. Superimposed on the bolt 2 is a clip which is designated as a whole by the numeral 3. The clip 3 has two side-by-side resilient clipping limbs 4 and 5 which define a pipe or cable receiving mouth 6 which is disposed between the clipping limbs 4 and 5. The two clipping limbs 4 and 5 are connected together by and are upstanding from a resilient foot part 7.

The base of the foot part 7 is designed, so as to be arched towards the pipe or cable receiving mouth 6. Provided in the region of the arched foot part 7 apex is a reception aperture 8 for the bolt 2. This reception aperture 8 is surrounded by two mutually-opposed resilient tabs 9. The tabs 9 are punched out from the foot part 7 and pro-

ject tangentially away from the arched foot part 7 towards the reception aperture 8.

For mounting the clip 3, the two clipping limbs 4 and 5 are forced towards one another, so that the arched foot part 7 becomes flatter. Then one slips the clip 3 onto the previously-fastened bolt 2. The resilient tabs 9 grip against the shank of the bolt 2 and prevent drawing-off of the clip 3 from the bolt 2. Upon release of the clipping limbs 4 and 5, these limbs 4 and 5 return into their original dispositions and the arched foot part 7 also attempts to assume, once again, its initial shape. Because of the consequential arching-up again of the foot part 7, the radial pressure of the tabs 9 against the bolt 2 is increased. The foot part 7 cannot, however, return completely into its original position and remains under stress. Because of this stress, loosening of the clip 3 is prevented even though the arrangement may be subject to vibration.

#### WHAT WE CLAIM IS:—

1. A pipe or cable clip comprising a resilient foot part having a reception aperture for a fastening element such as a bolt, and, upstanding from the foot part, side-by-side clipping limbs defining a mouth for reception of a pipe or a cable, characterised in that the foot part is arched towards said mouth, and that the said reception aperture for the fastening element is arranged in said arched foot part's apex region.

2. A pipe or cable clip as claimed in Claim 1, characterised in that the reception aperture is surrounded by resilient tabs.

3. A pipe or cable clip as claimed in Claim 2, characterised in that the reception aperture is surrounded by two said resilient tabs, these tabs being mutually opposed.

4. A pipe or cable clip as claimed in Claim 3, characterised in that the two mutually-opposed tabs are directed towards the pipe or cable receiving mouth.

5. A pipe or cable clip as claimed in Claim 2, 3 or 3, characterised in that the tabs project tangentially away from the arched foot part and are directed at the reception aperture.

6. A pipe or cable clip substantially as hereinbefore described with reference to and as illustrated in the accompanying drawing.

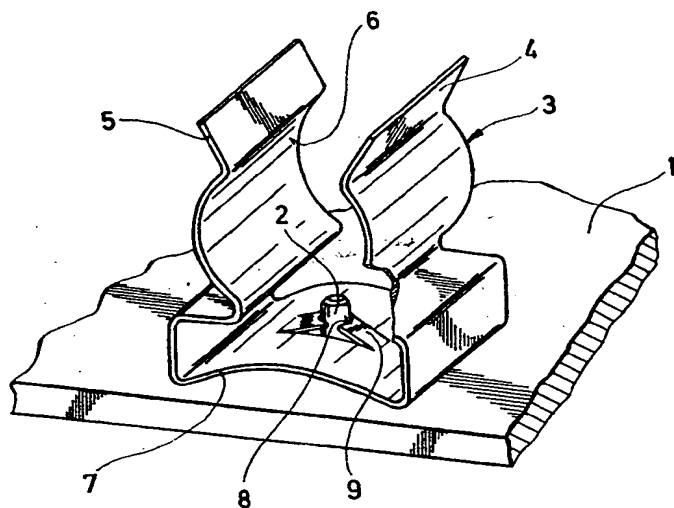
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COMPLETE SPECIFICATION

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*This drawing is a reproduction of  
the Original on a reduced scale*



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